

Ejercicios de ED de Variables Separables



EJERCICIOS PROPUESTOS:

Resolver las siguientes ecuaciones diferenciales:

$$1. \frac{ds}{dt} = \frac{(2t+1)(2s-1)}{2(t^2+t)}$$

$$2. \frac{ds}{dt} = \frac{(s^3-s)(4t^3-6t)}{(t^4-3t^2)(3s^2-1)}$$

$$3. \frac{du}{dt} = \frac{(u+1)(t+1)}{(u+2)(t-1)}$$

$$4. xdx - \sqrt{1-x^4}dy = x^2\sqrt{1+x^4}dy$$

$$5. \frac{du}{dt} = \frac{tu+u+3t+3}{tu+2u-t-2}$$

$$6. x^2y' = 1 - x^2 + y^2 - x^2y^2$$

$$7. 4tx \frac{dx}{dt} = x^2 + 1$$

$$8. (y \ln x)^{-1} \frac{dy}{dx} = \left(\frac{x}{y+1} \right)^2$$

$$9. \frac{d\theta}{dt} = (\cos t)(\cos 2\theta - \cos^2 \theta)$$

$$10. \frac{dy}{dt} = e^{-2t+3y}$$

$$11. \frac{dy}{dx} + y = yxe^{x+2}$$

$$12. e^x y dy - (e^{-y} + e^{2x-y}) dx = 0$$

$$13. 2tx^2 + 2t + (t^4 + 1)x' = 0,$$

$$\text{con } x(0) = 1$$

$$14. \frac{2r-1}{t} dr + \frac{r-2r^2}{t^2-1} dt = 0$$

$$\text{con } r(2) = 4$$

$$15. \frac{1}{(y-1)^2} dx + \frac{1}{\sqrt{x^2+4}} dy = 0$$

$$16. \frac{dT}{dt} = k(T - T_1)$$

Con $T(0) = T_0$, donde k, T_0, T_1 son constantes.

$$17. (1+y^2)dx = (y - \sqrt{1+y^2})(1+x^2)^{3/2} dy$$

$$18. y' - 2\cos x = \cos(x+y) + \cos(x-y)$$



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